FIG.1

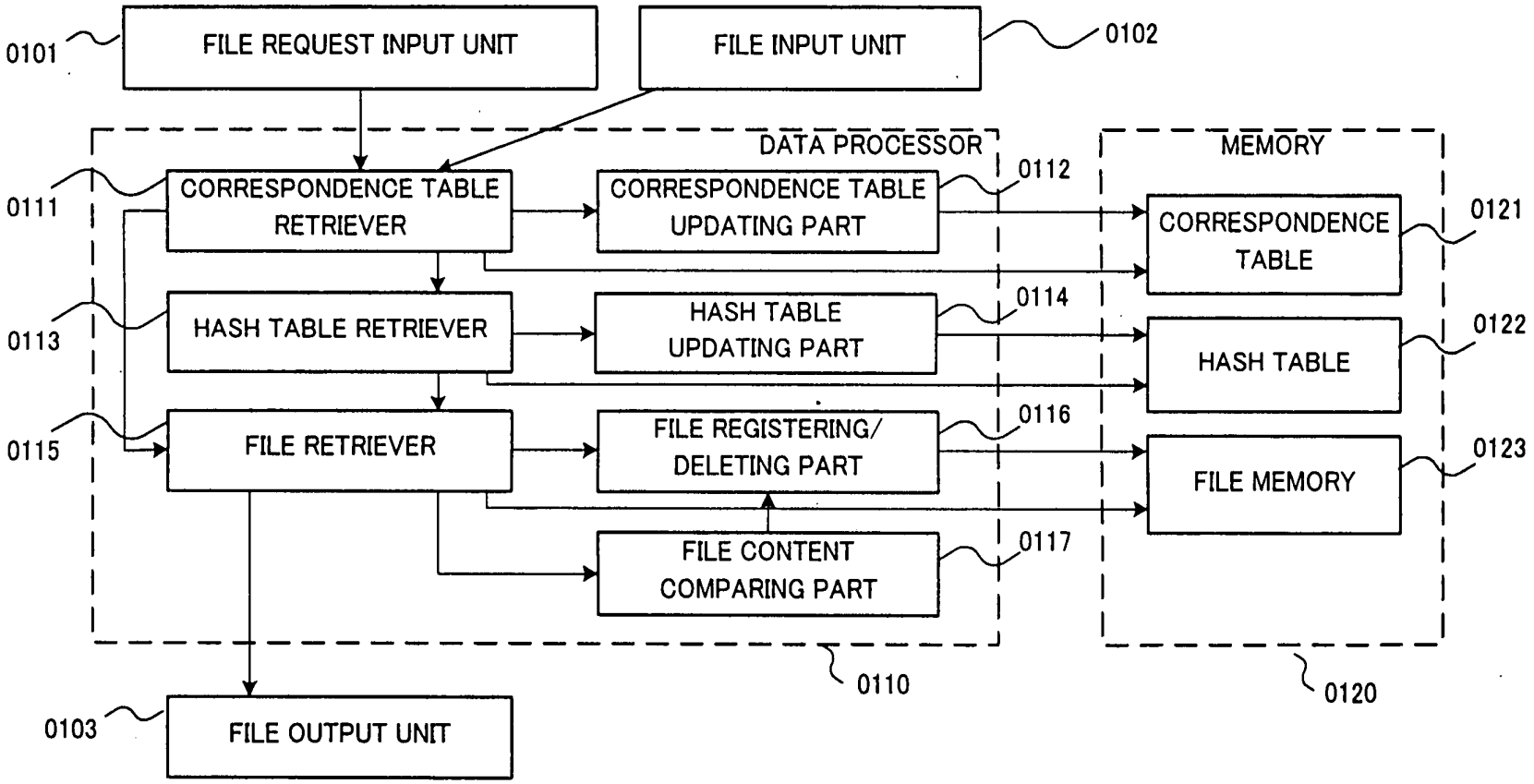

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FIG.2

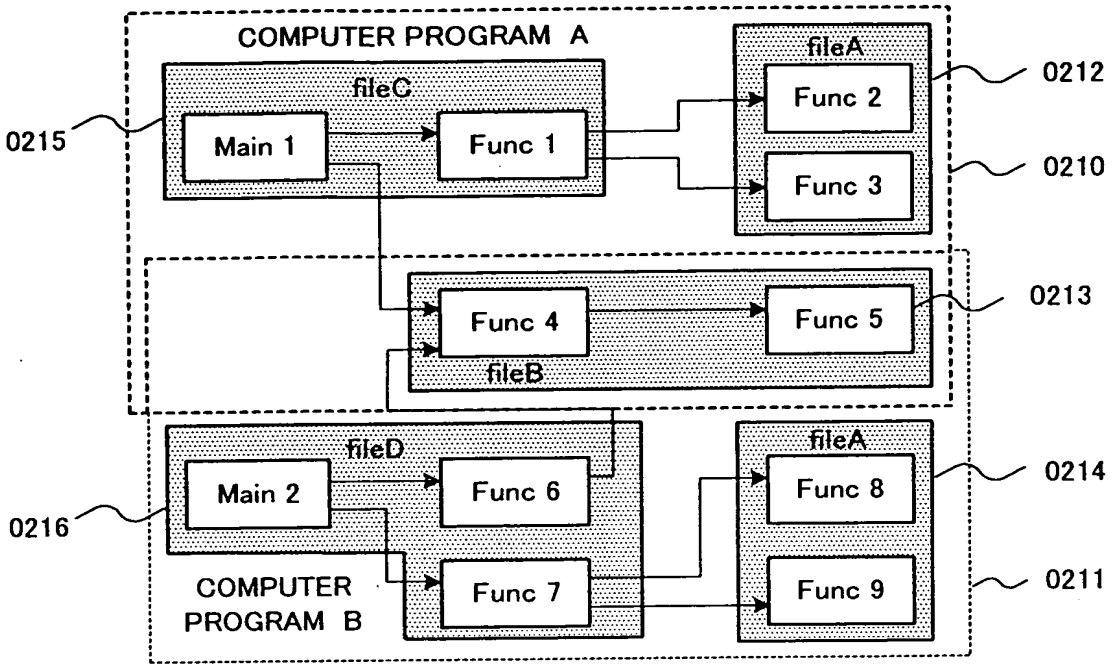

FIG.3

FILE NAME	FILE ID	MANAGING ID
file A	usr 001. prog 01	A-1
	usr 001. prog 02	A-2
	usr 002. prog 01	A-1
file B	usr 002. prog 01	B-1
	usr 003. prog 01	B-2
⋮	⋮	⋮

FIG.4

FILE NAME	FILE	MANAGING ID
file A	FuncA ( ) ~0401	A-1
	FuncB ( ) ~0402	A-2
	FuncC ( ) ~0403	A-3

(a)

KEY VALUE	MANAGING ID
HASH TABLE FOR FILE 0401(=aaaa)	A-1
HASH TABLE FOR FILE 0402(=bbbb)	A-2
HASH TABLE FOR FILE 0403(=bbbb)	A-3

(b)

FIG.8

MANAGING ID	FILE
A-1	FuncA ( ) ~0401
A-2	FuncB ( ) ~0402
A-3	FuncC ( ) ~0403

FIG.5

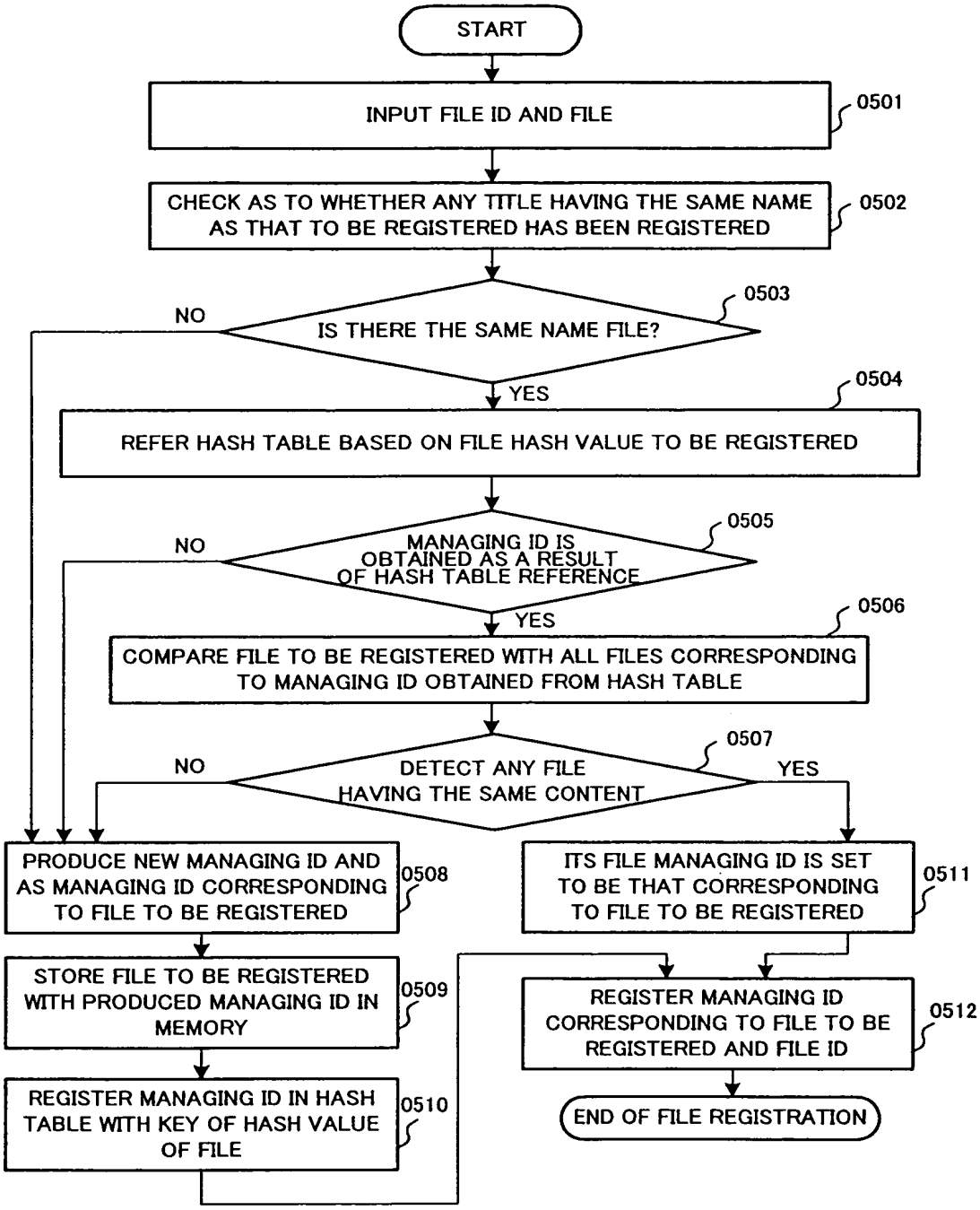
START
INPUT FILE ID AND FILE
0501
CHECK AS TO WHETHER ANY TITLE HAVING THE SAME NAME AS THAT TO BE REGISTERED HAS BEEN REGISTERED
0502
IS THERE THE SAME NAME FILE?
0503
NO
YES
REFER HASH TABLE BASED ON FILE HASH VALUE TO BE REGISTERED
0504
MANAGING ID IS OBTAINED AS A RESULT OF HASH TABLE REFERENCE
0505
NO
YES
COMPARE FILE TO BE REGISTERED WITH ALL FILES CORRESPONDING TO MANAGING ID OBTAINED FROM HASH TABLE
0506
DETECT ANY FILE HAVING THE SAME CONTENT
0507
NO
YES
PRODUCE NEW MANAGING ID AND AS MANAGING ID CORRESPONDING TO FILE TO BE REGISTERED
0508
STORE FILE TO BE REGISTERED WITH PRODUCED MANAGING ID IN MEMORY
0509
REGISTER MANAGING ID IN HASH TABLE WITH KEY OF HASH VALUE OF FILE
0510
ITS FILE MANAGING ID IS SET TO BE THAT CORRESPONDING TO FILE TO BE REGISTERED
0511
REGISTER MANAGING ID CORRESPONDING TO FILE TO BE REGISTERED AND FILE ID
0512
END OF FILE REGISTRATION

FIG.6

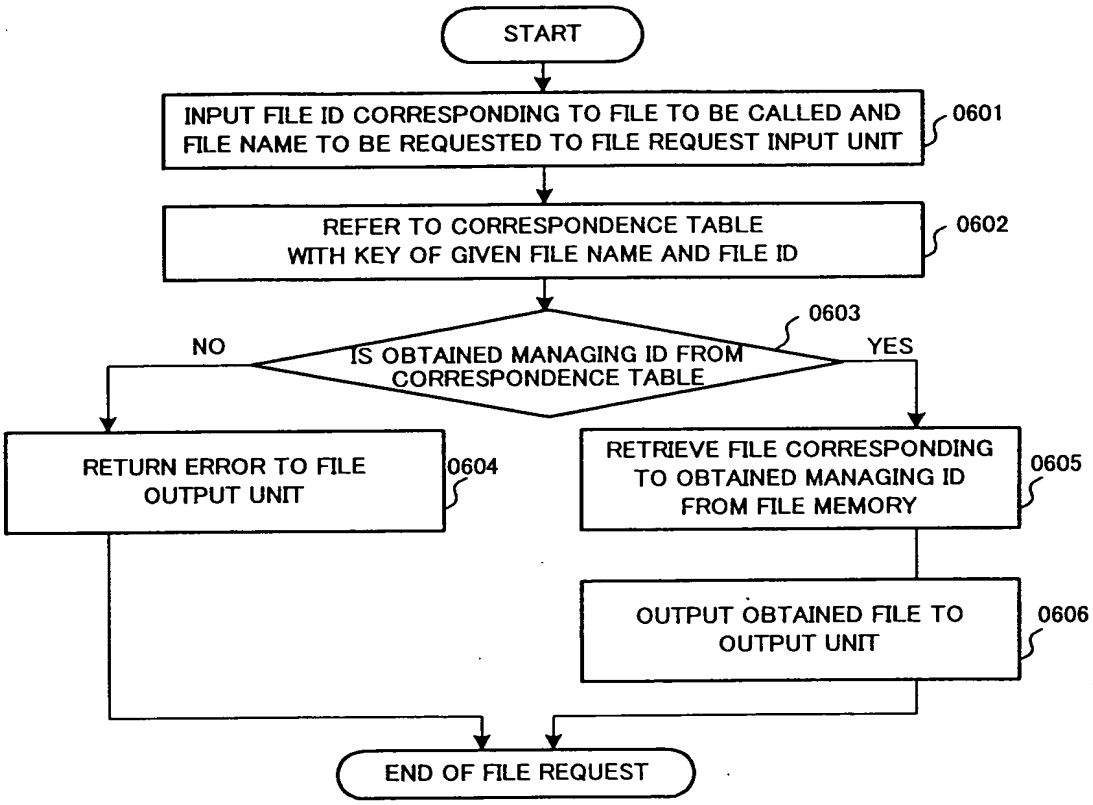
START
INPUT FILE ID CORRESPONDING TO FILE TO BE CALLED AND FILE NAME TO BE REQUESTED TO FILE REQUEST INPUT UNIT
0601
REFER TO CORRESPONDENCE TABLE WITH KEY OF GIVEN FILE NAME AND FILE ID
0602
0603
IS OBTAINED MANAGING ID FROM CORRESPONDENCE TABLE
NO
YES
RETURN ERROR TO FILE OUTPUT UNIT
0604
RETRIEVE FILE CORRESPONDING TO OBTAINED MANAGING ID FROM FILE MEMORY
0605
OUTPUT OBTAINED FILE TO OUTPUT UNIT
0606
END OF FILE REQUEST

FIG.7

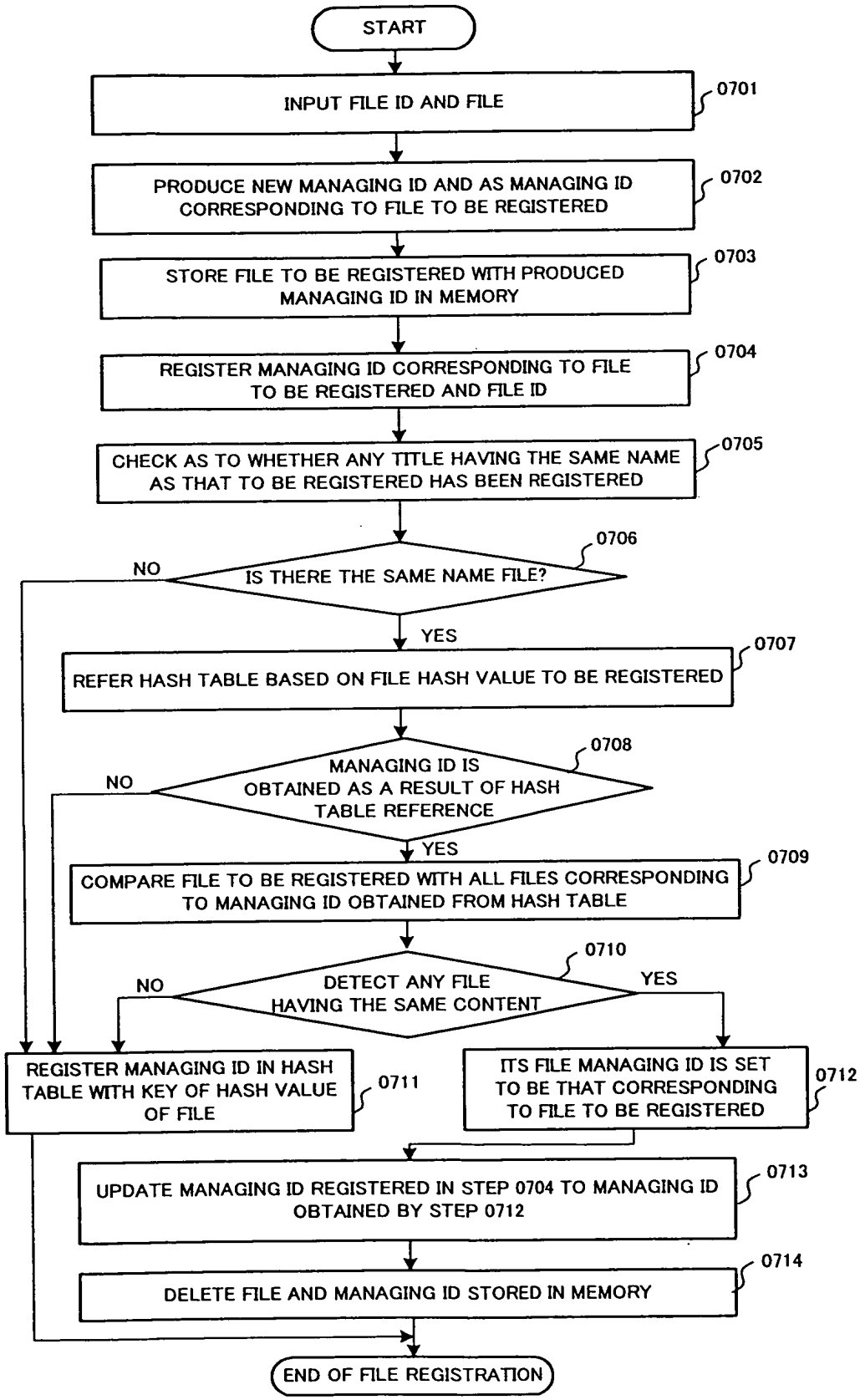
START
INPUT FILE ID AND FILE
0701
PRODUCE NEW MANAGING ID AND AS MANAGING ID CORRESPONDING TO FILE TO BE REGISTERED
0702
STORE FILE TO BE REGISTERED WITH PRODUCED MANAGING ID IN MEMORY
0703
REGISTER MANAGING ID CORRESPONDING TO FILE TO BE REGISTERED AND FILE ID
0704
CHECK AS TO WHETHER ANY TITLE HAVING THE SAME NAME AS THAT TO BE REGISTERED HAS BEEN REGISTERED
0705
IS THERE THE SAME NAME FILE?
0706
NO
YES
REFER HASH TABLE BASED ON FILE HASH VALUE TO BE REGISTERED
0707
MANAGING ID IS OBTAINED AS A RESULT OF HASH TABLE REFERENCE
0708
NO
YES
COMPARE FILE TO BE REGISTERED WITH ALL FILES CORRESPONDING TO MANAGING ID OBTAINED FROM HASH TABLE
0709
DETECT ANY FILE HAVING THE SAME CONTENT
0710
NO
YES
REGISTER MANAGING ID IN HASH TABLE WITH KEY OF HASH VALUE OF FILE
0711
ITS FILE MANAGING ID IS SET TO BE THAT CORRESPONDING TO FILE TO BE REGISTERED
0712
UPDATE MANAGING ID REGISTERED IN STEP 0704 TO MANAGING ID OBTAINED BY STEP 0712
0713
DELETE FILE AND MANAGING ID STORED IN MEMORY
0714
END OF FILE REGISTRATION

FIG.9

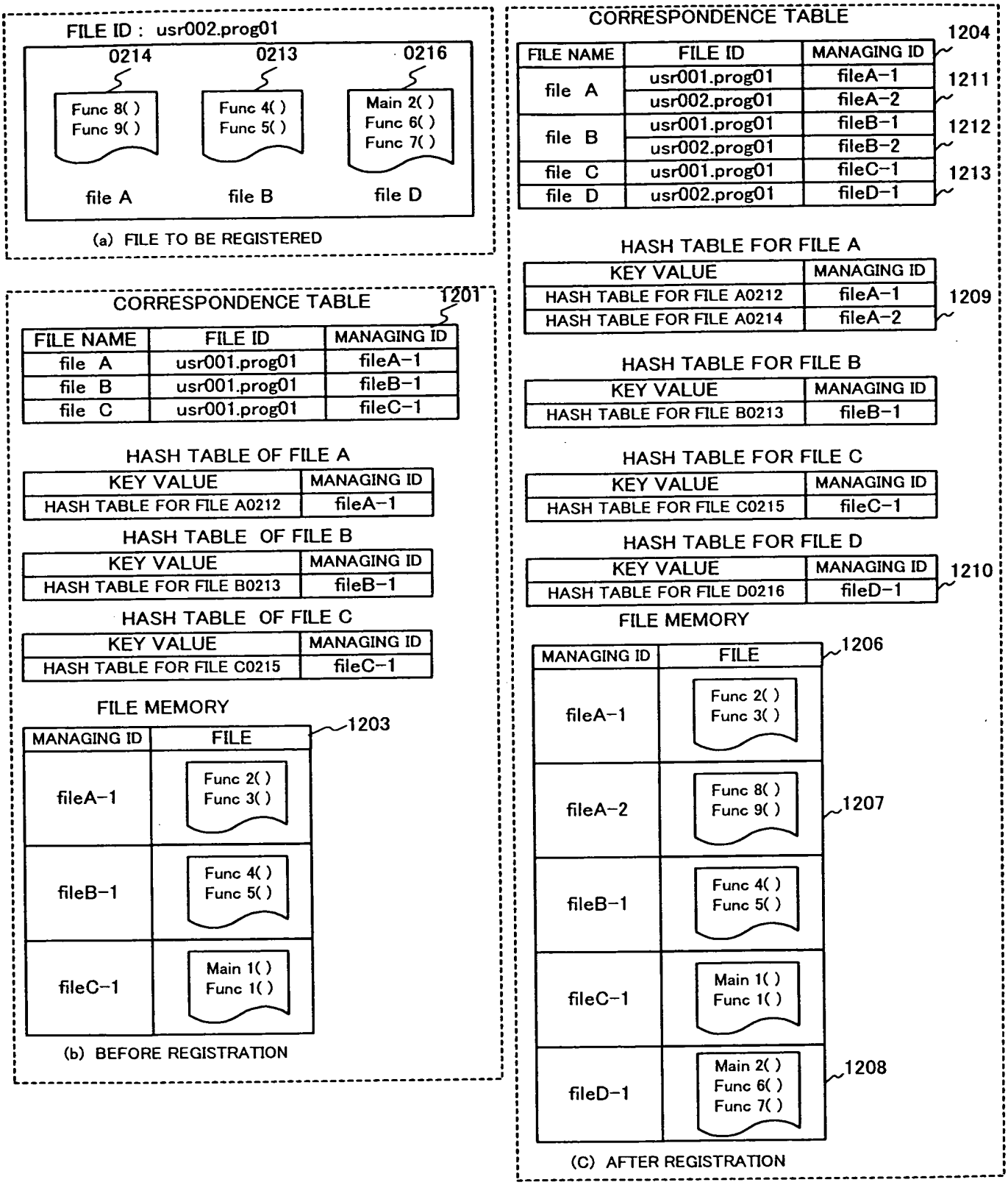
FILE ID : usr002.prog01
0214
0213
0216
Func 8( )
Func 9( )
Func 4( )
Func 5( )
Main 2( )
Func 6( )
Func 7( )
file A
file B
file D
(a) FILE TO BE REGISTERED
CORRESPONDENCE TABLE
1201
FILE NAME | FILE ID | MANAGING ID
file A | usr001.prog01 | fileA-1
file B | usr001.prog01 | fileB-1
file C | usr001.prog01 | fileC-1
HASH TABLE OF FILE A
KEY VALUE | MANAGING ID
HASH TABLE FOR FILE A0212 | fileA-1
HASH TABLE OF FILE B
KEY VALUE | MANAGING ID
HASH TABLE FOR FILE B0213 | fileB-1
HASH TABLE OF FILE C
KEY VALUE | MANAGING ID
HASH TABLE FOR FILE C0215 | fileC-1
FILE MEMORY
1203
MANAGING ID | FILE
fileA-1 | Func 2( ) Func 3( )
fileB-1 | Func 4( ) Func 5( )
fileC-1 | Main 1( ) Func 1( )
(b) BEFORE REGISTRATION
CORRESPONDENCE TABLE
1204
FILE NAME | FILE ID | MANAGING ID
file A | usr001.prog01 | fileA-1
1211
file A | usr002.prog01 | fileA-2
file B | usr001.prog01 | fileB-1
1212
file B | usr002.prog01 | fileB-2
file C | usr001.prog01 | fileC-1
1213
file D | usr002.prog01 | fileD-1
HASH TABLE FOR FILE A
KEY VALUE | MANAGING ID
HASH TABLE FOR FILE A0212 | fileA-1
1209
HASH TABLE FOR FILE A0214 | fileA-2
HASH TABLE FOR FILE B
KEY VALUE | MANAGING ID
HASH TABLE FOR FILE B0213 | fileB-1
HASH TABLE FOR FILE C
KEY VALUE | MANAGING ID
HASH TABLE FOR FILE C0215 | fileC-1
HASH TABLE FOR FILE D
KEY VALUE | MANAGING ID
HASH TABLE FOR FILE D0216 | fileD-1
1210
FILE MEMORY
1206
MANAGING ID | FILE
fileA-1 | Func 2( ) Func 3( )
fileA-2 | Func 8( ) Func 9( )
1207
fileB-1 | Func 4( ) Func 5( )
fileC-1 | Main 1( ) Func 1( )
fileD-1 | Main 2( ) Func 6( ) Func 7( )
1208
(C) AFTER REGISTRATION

FIG.10

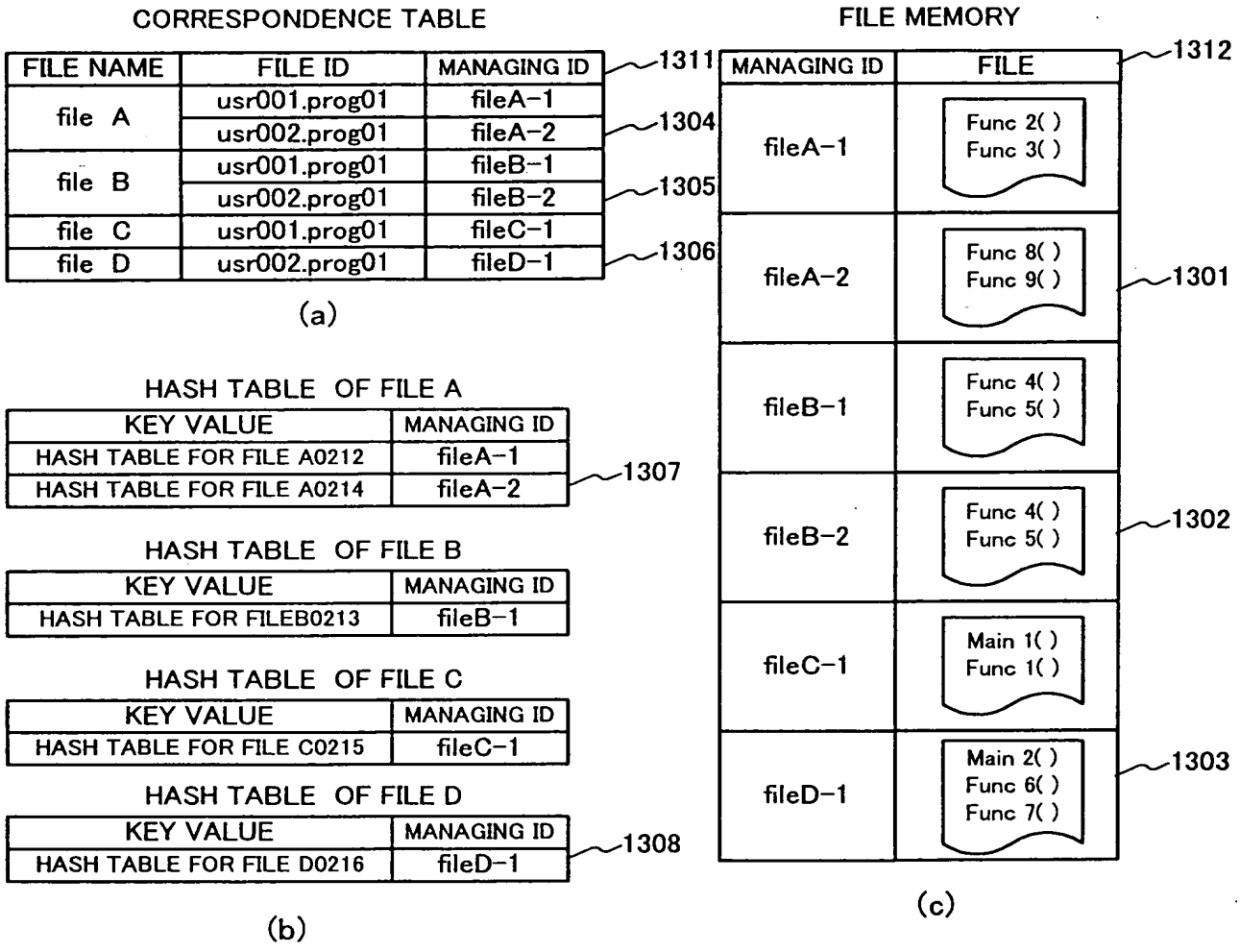
CORRESPONDENCE TABLE
FILE NAME
FILE ID
MANAGING ID
file A
usr001.prog01
fileA-1
usr002.prog01
fileA-2
file B
usr001.prog01
fileB-1
usr002.prog01
fileB-2
file C
usr001.prog01
fileC-1
file D
usr002.prog01
fileD-1
1311
1304
1305
1306
(a)
HASH TABLE OF FILE A
KEY VALUE
MANAGING ID
HASH TABLE FOR FILE A0212
fileA-1
HASH TABLE FOR FILE A0214
fileA-2
1307
HASH TABLE OF FILE B
KEY VALUE
MANAGING ID
HASH TABLE FOR FILEB0213
fileB-1
HASH TABLE OF FILE C
KEY VALUE
MANAGING ID
HASH TABLE FOR FILE C0215
fileC-1
HASH TABLE OF FILE D
KEY VALUE
MANAGING ID
HASH TABLE FOR FILE D0216
fileD-1
1308
(b)
FILE MEMORY
MANAGING ID
FILE
1312
fileA-1
Func 2( )
Func 3( )
fileA-2
Func 8( )
Func 9( )
1301
fileB-1
Func 4( )
Func 5( )
fileB-2
Func 4( )
Func 5( )
1302
fileC-1
Main 1( )
Func 1( )
fileD-1
Main 2( )
Func 6( )
Func 7( )
1303
(c)

FIG.11

File	ID	
HASH TABLE FOR FILE 0401	A-1	← FOR FILE NAME"file A"
HASH TABLE FOR FILE 0402	A-2	← FOR FILE NAME"file A"
HASH TABLE FOR FILE 0403	A-3	← FOR FILE NAME"file A"
HASH TABLE FOR FILE 0404	B-1	← FOR FILE NAME"file B"
HASH TABLE FOR FILE 0405	B-2	← FOR FILE NAME"file B"
⋮	⋮	

FIG.12

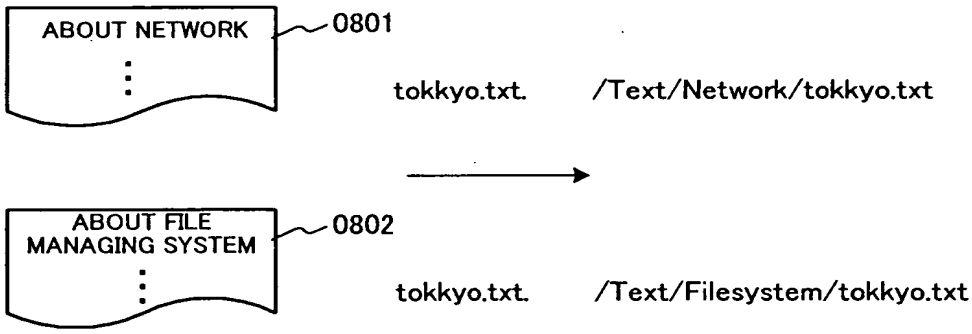

FIG.13

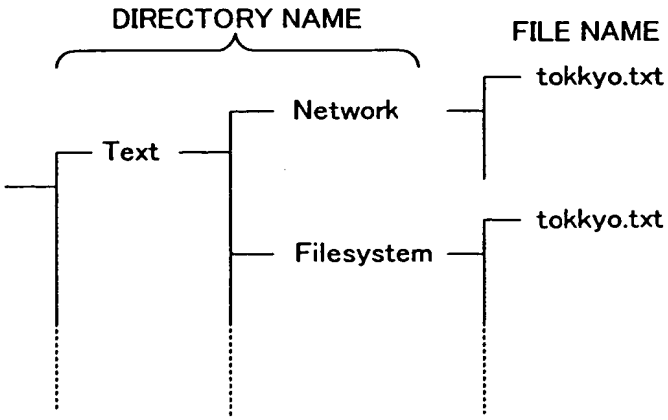

FIG.14

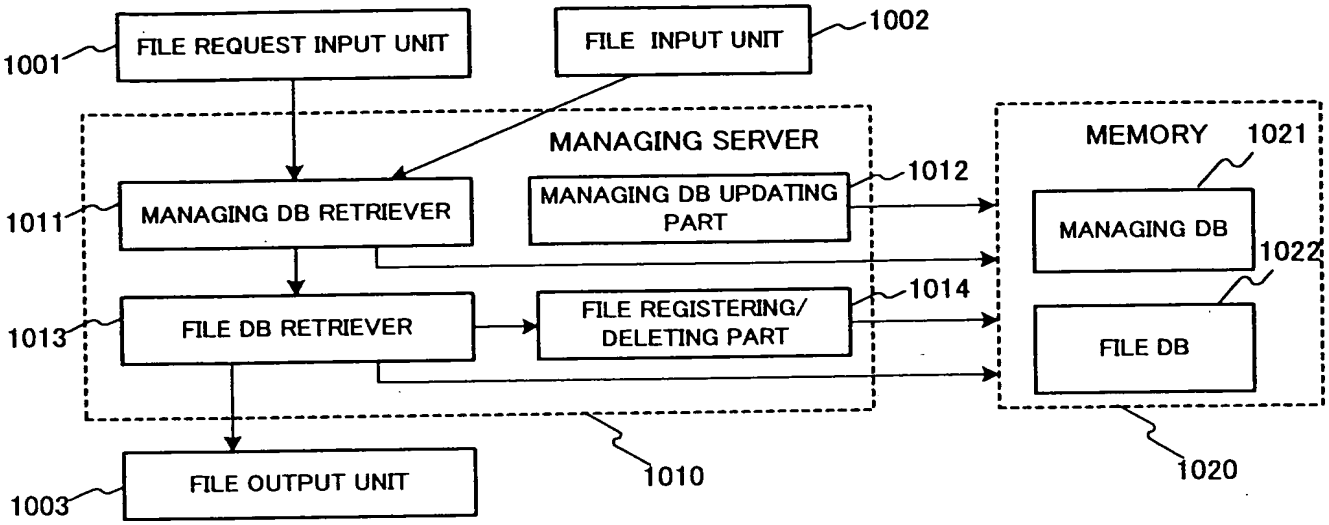

FIG.15

TYPE	FILE NAME	VERSION	MANAGING ID
1	A	1.0	001
2	A	1.0	002
1	A	2.0	003
1	B	1.0	004
⋮			